

CLAIMS

What is claimed is:

1. A setting device for setting a memory control device which accesses a memory module implementing a memory device therein, comprising:

a memory attribute information acquisition unit for acquiring memory attribute information indicating an attribute of the memory module from an attribute memory provided in the memory module; and

a transfer rate setting unit for determining, based on the memory attribute information, a data transfer rate setting value as a rate of an upper limit value of a data transfer rate relative to a maximum data transfer rate, and for setting the determined data transfer rate setting value in the memory control device, the upper limit value of the data transfer rate being at which the memory control device accesses the memory module, and the maximum data transfer rate being at which the memory control device is able to access the memory module.

2. The setting device according to claim 1,

wherein the transfer rate setting unit determines an upper limit value of a number of memory accesses issued by the memory control device per unit time as the data transfer rate setting value based on the memory attribute information, and sets the determined upper limit value in the memory control device.

3. The setting device according to claim 1,

wherein the transfer rate setting unit determines a value indicating a number of idle cycles while the memory control device is not performing memory accesses as the data transfer rate setting value based on the memory attribute information, each idle cycle being inserted between one cycle while the memory control device is performing a memory access and the other to set the determined value in the memory control device.

4. The setting device according to claim 1,

wherein the memory module generates heat by being accessed by the memory control device, and

the transfer rate setting unit determines a data transfer rate setting value for maintaining a temperature of the memory module at a predetermined upper limit temperature or lower based

on the memory attribute information, and sets the determined data transfer rate setting value in the memory control device.

5. The setting device according to claim 4,

wherein, as a setting for maintaining the memory module at the upper limit temperature or lower, the transfer rate setting unit determines, as the data transfer rate setting value, a smaller value in a case where a heating value of the memory module, which is determined in accordance with the memory attribute information, is larger as compared with a value in a case where the heating value of the memory module, which is determined in accordance with the memory attribute information, is smaller, and sets the determined data transfer rate setting value in the memory control device.

6. The setting device according to claim 4, further comprising an upper limit temperature acquisition unit for acquiring an upper limit temperature at which the memory module is operated,

wherein the transfer rate setting unit determines a data transfer rate setting value for maintaining the temperature of the memory module at the upper limit temperature or lower based on the memory attribute information, and sets the determined data transfer rate setting value in the memory control device.

7. The setting device according to claim 1,

wherein the memory module is attached into any of a plurality of memory slots provided in an information processing apparatus,

the setting device further includes a memory attachment position information acquisition unit for acquiring memory attachment position information indicating into which of the memory slots the memory module is attached, and

the transfer rate setting unit determines the data transfer rate setting value based on the memory attribute information and the memory attachment position information, and sets the determined data transfer rate setting value in the memory control device.

8. The setting device according to claim 1,

wherein the setting device is a device for setting the data transfer rates for a plurality of the memory modules attached into an information processing apparatus,

the memory attribute information acquisition unit acquires the memory attribute information of the plurality of memory modules for each thereof in association therewith,

the transfer rate setting unit creates individual setting values as data transfer rate setting values set when the memory modules are singly attached into the information processing apparatus for each of the plurality of memory modules based on the memory attribute information of the memory modules, and determines a value between maximum and minimum values of the individual setting values, each of which is created so as to correspond to each of the plurality of memory modules, as a data transfer rate setting value for the plurality of memory modules.

9. The setting device according to claim 1,

wherein the setting device is a device for setting the data transfer rate setting values for a plurality of the memory modules attached into an information processing apparatus,

the memory attribute information acquisition unit acquires the memory attribute information of the plurality of memory modules for each thereof in association therewith,

the transfer rate setting unit creates individual setting values as data transfer rate setting values set when the memory modules are singly attached into the information processing apparatus for each of the plurality of memory modules based on the memory attribute information of the memory modules, and determines a minimum value of the individual setting values, each of which is created so as to correspond to each of the plurality of memory modules, as a data transfer rate setting value for the plurality of memory modules.

10. The setting device according to claim 1,

wherein the memory attribute information acquisition unit acquires type identification information identifying a type of any of the memory module and the memory device as the memory attribute information, and

the transfer rate setting unit determines the data transfer rate setting value in accordance with the type identification information, and sets the determined data transfer rate setting value in the memory control device.

11. The setting device according to claim 1,

wherein the memory attribute information acquisition unit acquires manufacturer identification information identifying a manufacturer who has manufactured any of the memory

module and the memory device as the memory attribute information, and

the transfer rate setting unit determines the data transfer rate setting value in accordance with the manufacturer identification information, and sets the determined data transfer rate setting value in the memory control device.

12. The setting device according to claim 1,

wherein the memory attribute information acquisition unit acquires number-of-devices information indicating a number of the memory devices implemented in the memory module as the memory attribute information, and

the transfer rate setting unit determines, as the data transfer rate setting value, a smaller value in a case where the number of memory devices, which is indicated by the number-of-devices information, is larger, as compared with a value in a case where the number of memory devices, which is indicated by the number-of-devices information, is smaller, and sets the determined data transfer rate setting value in the memory control device.

13. The setting device according to claim 1,

wherein the memory module includes a board implementing at least one memory device thereon,

the memory attribute information acquisition unit acquires, as the memory attribute information, memory bank information indicating whether the memory module is a memory module of single-sided implementation, which implements the memory device on one side of the board, or a memory module of double-sided implementation, which implements the memory devices on both sides of the board, and

the transfer rate setting unit determines the data transfer rate setting value in accordance with the memory bank information, and sets the determined data transfer rate setting value in the memory control device.

14. The setting device according to claim 13,

wherein the transfer rate setting unit determines, as the data transfer rate setting value, a smaller value in a case where the memory bank information indicates the memory module of the double-sided implementation as compared with a value in a case where the memory bank information indicates the memory module of the single-sided implementation, and sets the determined data transfer rate setting value in the memory control device.

15. An information processing apparatus, comprising:

- a memory module implementing a memory device therein;

- a memory attribute information acquisition unit for acquiring memory attribute information indicating an attribute of the memory module from an attribute memory provided in the memory module;

- a memory control device for accessing the memory module; and

- a transfer rate setting unit for determining, based on the memory attribute information, a data transfer rate setting value as a rate of an upper limit value of a data transfer rate relative to a maximum data transfer rate, and for setting the determined data transfer rate setting value in the memory control device, the upper limit value of the data transfer rate being at which the memory control device accesses the memory module, and the maximum data transfer rate being at which the memory control device is able to access the memory module.